

Exhibit M

UNITED STATES PATENT OFFICE

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GLASS ANNEALING NESTING RACK

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3 Claims. (Cl. 49—45)

This invention relates to new and useful improvements in supporting racks for annealing glassware, and it is among the objects thereof to provide a rack of simple and inexpensive construction which shall be adapted to support glass articles in a manner to more effectively expose the glass to the treating environment and which shall be adapted to nest the glass articles thereby utilizing a minimum amount of the space of the annealing tunnel.

It is a further object of the invention to provide a supporting rack for glass articles to subject them to an annealing process, which shall be constructed in a manner to facilitate the insertion and assembly of the ware without breakage, and which shall prevent displacement of the ware after it is assembled on the annealing rack.

These and other objects of the invention will become more apparent from a consideration of the accompanying drawing constituting a part hereof in which like reference characters designate like parts and in which:

Fig. 1 is a side elevational view partially in section of a glass annealing rack embodying the principles of this invention;

Fig. 2 a front elevational view thereof partially in section;

Fig. 3 a plan view of a portion of the rack shown in Fig. 1, and

Fig. 4 a view in perspective of a spacing and supporting bracket employed in the rack of Fig. 1.

With reference to the several figures of the drawing, the structure therein illustrated comprises a channel 1 having flanges 2 turned up at one end to provide ears or lugs 3, which constitute supporting abutments for one of a series of supporting and spacing brackets generally designated by the numeral 4. A round bar 5 is secured in the channel at the end opposite the lugs 3, the bar being of inverted U-shape and is secured to the walls of the channel 1 by spot-welding. The member 5 constitutes a loop by which the rack may be engaged to place it or remove it from the floor or conveyor of the glass annealing Lehr.

The supporting and spacing brackets 4 are formed as shown in Fig. 4 of the drawing and consist of a loop which is spot-welded to a hinge member 6 at the points of contact designated by the numeral 7. The hinge member 6 is provided with trunnion-like elements 8 which are inserted in a series of perforations 9 that are uniformly spaced in the side walls of the channel member 1. When thus inserted, the spacing and supporting brackets 4 may be disposed either in the

collapsed position, as shown on the right hand side of Fig. 1, or in a vertically upright position, shown in the left hand end of Fig. 1. When in the upright position, a portion 10 of the hinge member 6 constitutes a leg or chair which abuts on the base of the channel 1, as shown in dotted lines in Fig. 1 and in elevation in Fig. 2. The ends of the bracket 4 are looped to form a bead 11 which eliminates sharp edges.

The operation of the above described device is briefly as follows:

The racks are either placed on a loading table adjacent the ware-forming apparatus or they may be placed directly on the conveyor element of the glass annealing Lehr with the brackets 4 turned down as shown in the right hand end of Fig. 1. The ware, as it is received from the forming machine, is then placed on the bracket, as shown in Fig. 1, the ware in the illustration constituting headlight lenses for automobiles. As the ware is placed on the supporting bracket in its tilted position, the weight of the lens will tilt the supporting bracket to the vertical position in the manner shown on the left hand side of Fig. 1, the weight of the ware and the force of placing it on the bracket will cause the bracket to assume the vertical position and to rest on its chair or support 10. Each of the brackets 4 constitutes an end abutment for the convex portion of the lens that rests upon the adjacent support and the only point of contact of the lens with the support is at the bottom and near the outer periphery of its convex surface.

It is important to obtain minimum contact of the supports and the ware to minimize the danger of scratching or marring the surface of the ware, which in automobile headlight lenses would interfere with their light reflecting and deflecting efficiency.

By the use of the rack as hereinbefore described, the glass articles or lenses can be quickly nested therein without unnecessary handling and with the desirable result of packing a maximum number of articles within a minimum space, thus utilizing the available space of the glass annealing Lehr to obtain a maximum capacity in annealing. This is also important in obtaining maximum fuel economy in annealing for the amount of ware annealed.

It is to be noted that the channel element or base of the rack and the spacing and supporting bracket are constructed of relatively lightweight materials to constitute the rack a unit of low heat mass that is sensitive to the heating environment, whereby the heat of the ware will

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FIG. 1

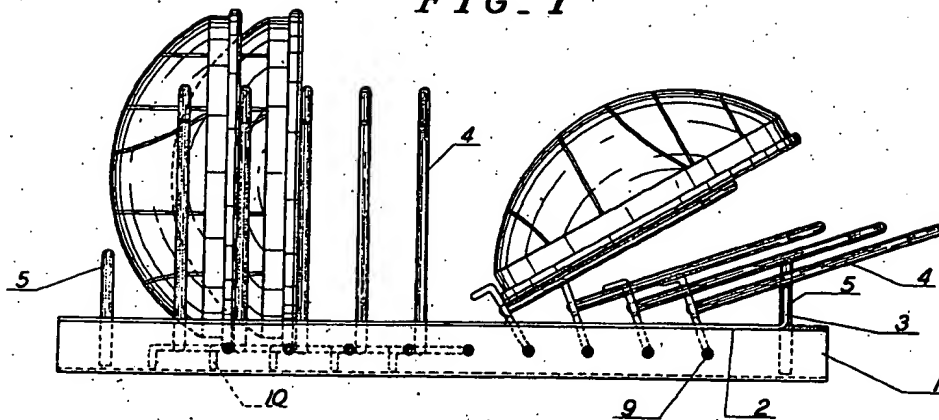


FIG. 2

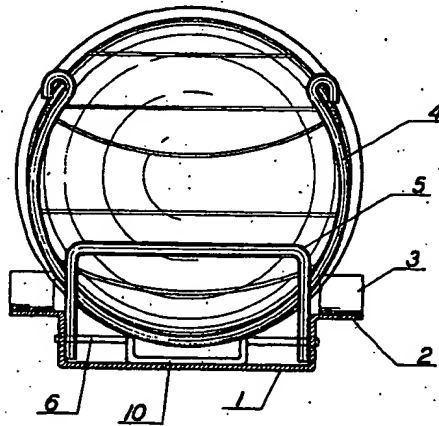


FIG. 3

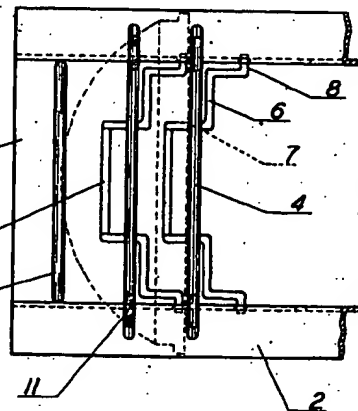
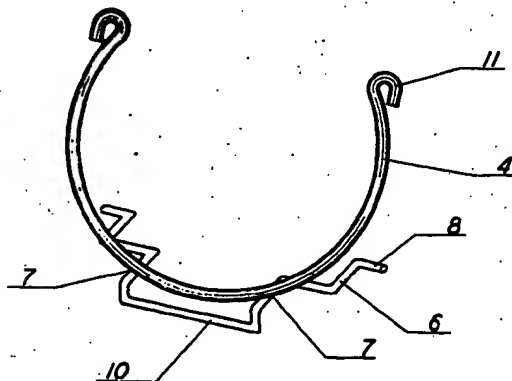


FIG. 4



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not be dissipated by its contact with its support, and which would result in breakage if a substantial temperature differential existed between the ware and the support.

5 Although one embodiment of the invention has been herein illustrated and described, it will be obvious to those skilled in the art that various modifications may be made in the details of construction without departing from the principles herein set forth.

10 I claim:

1. Apparatus for spacing and supporting glass articles to be annealed comprising a base member, a plurality of brackets mounted on said
15 base member, said brackets being hinged to said base to be movable in a substantially horizontal position for receiving the ware to be supported thereon and to be movable to an upright position after the ware is placed thereon, whereby
20 the ware is supported in uniform spaced relation on the supporting member.

2. Apparatus for spacing and supporting glass articles to be annealed comprising a base

member, a plurality of brackets mounted on said base member, said brackets consisting of spacing elements for engaging the glassware and hinge members provided with chairs or supports on which the articles rest, said hinge members being pivotally mounted on the base whereby the spacing members can be nested on the base to facilitate placing the ware thereon and returned to the upright position by force of the weight of the ware when it is placed on its supporting
10 chair.

3. Apparatus for spacing and supporting glass articles to be annealed comprising a base member, a plurality of brackets mounted on said base member, said brackets each consisting of a
15 looped element joined to a hinge bracket to be movable with the latter, the hinge bracket having trunnion-like members pivoted in the base and a chair for supporting the glassware thereon, the looped member constituting end abut-
20 ments for uniformly spacing the ware on the supporting rack.

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